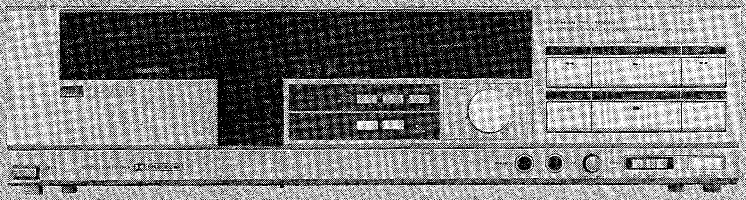
SERVICE MANUAL

STEREO CASSETTE DECK

SANSUI D-290

(Silver & Black Model)



CAUTION

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

Sansui

SANSUI ELECTRIC CO., LTD.

•SPECIFICATIONS

Track format	4-track/2-channel system
Tape speed	4.8 cm/sec.
Heads (2-head configuration)	
Rec/pb head	HIGH-Bs hard permalloy
Erase head	Double-gap HIGH-Bs ferrite
Motor	Capstan: Electronically Controlled DC Motor Reels: DC Motor
Wow/flutter	0.05% max (WRMS)
Fast forwarding (rewinding) time	Approx. 85 sec. (for C-60 tape)
Frequency response (—20 VU recording/playback)	
Normal tape (LH)	20 to 15,000 Hz (30 to 14,000 Hz ±3 dB)
Chrome tape	20 to 16,000 Hz (30 to 15,000 Hz ±3 dB)
Metal tape	20 to 17,000 Hz (30 to 16,000 Hz ±3 dB)
Signal-to-noise ratio (recording/playback with metal tape)	
DOLBY NR OFF	Better than 57 dB
DOLBY-B NR ON	Better than 67 dB (above 5 kHz)
DOLBY-C NR ON	Better than 77 dB (above 1 kHz)
Erasure rate (metal tape)	70 dB min (1 kHz)
Recording bias frequency	85 kHz
Input sensitivity/Impedance	
LINE IN (REC)	70 mV/100 kohms
MIC	0.5 mV/200~5,000 ohms
Power requiremets	120/220/240V 50/60 Hz
For U.S.A. and Canada	120V (60 Hz)
Power consumption	14W
Dimensions	430 mm (16-15/16") W 111 mm (4-3/8") H 234 mm (9-1/4") D
Weight	3.6 kg (7.9 lbs) net 4.6 kg (10.1 lbs) packed

* Design and specifications subject to changes without notice for improvements.
* Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

"Dolby" and the double D symbol are trade marks of Dolby Laboratories Licensing Corporation.

CAUTION

1. The symbols, UL, CSA, SA, BS, UK, EU, AS and XX on the parts list and the schematic diagram mean followings respectively.

   UL...................... Manufactured for U.S.A market.
   (Underwriters Laboratories approved model.)
   CSA.................... Manufactured for Canadian market.
   SA...................... Manufactured for South African market.
   BS, UK............... Manufactured for United Kingdom market.
   EU...................... Manufactured for European market.
   AS...................... Manufactured for Australian market.
   XX...................... Standard Version.
   NON MARK........ Common Parts.

2. Some printed circuit boards are not supplied as the assembled. To separate these in this service manual, the stock No's are not indicated at the ends of the board names. However, the individual parts on the circuit boards are provided by orders.

3. Since some of capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors & resistors, which was issued on February 1983.

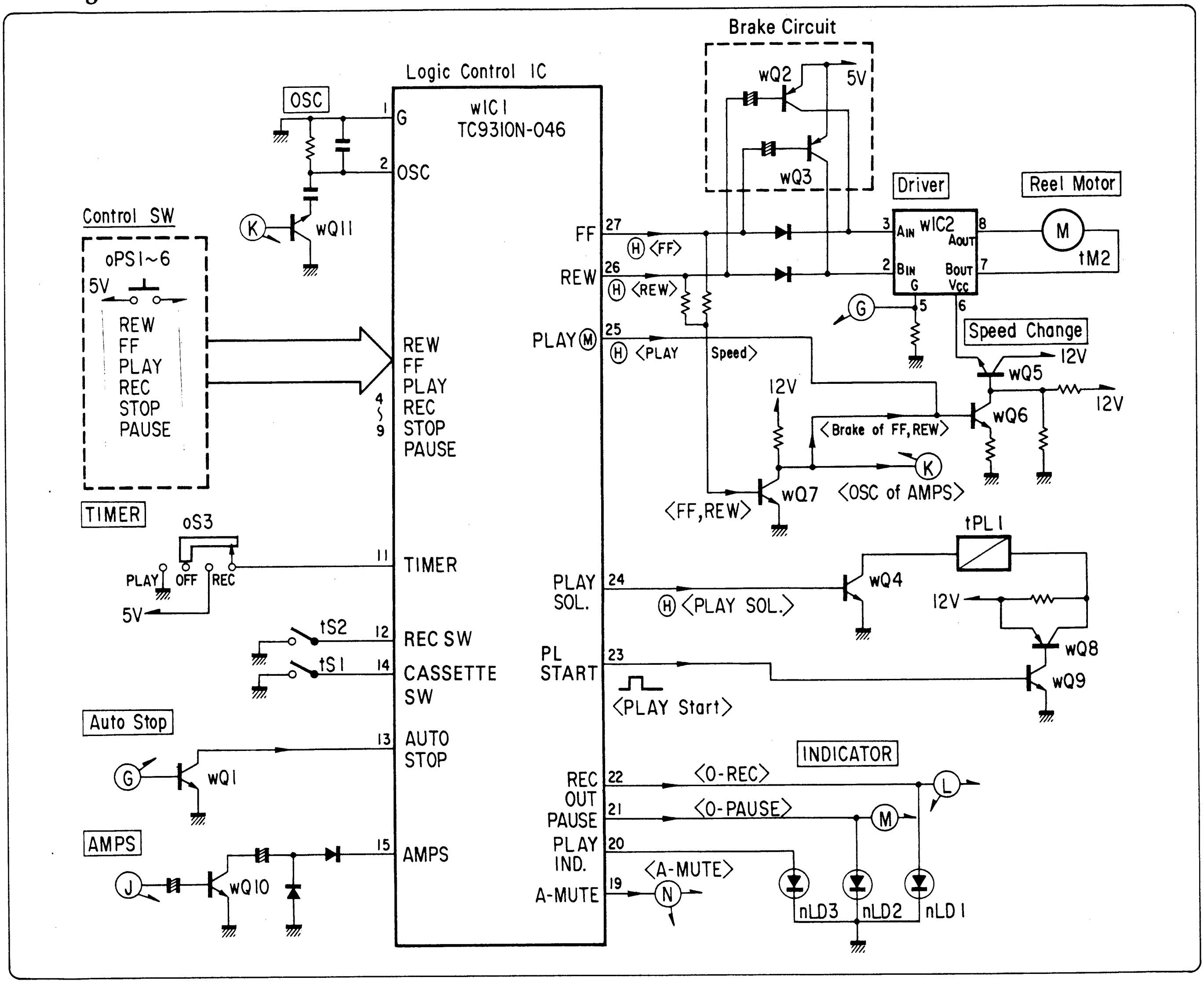
4. Abbreviations in this service manual are as follows.

•Abbreviations List

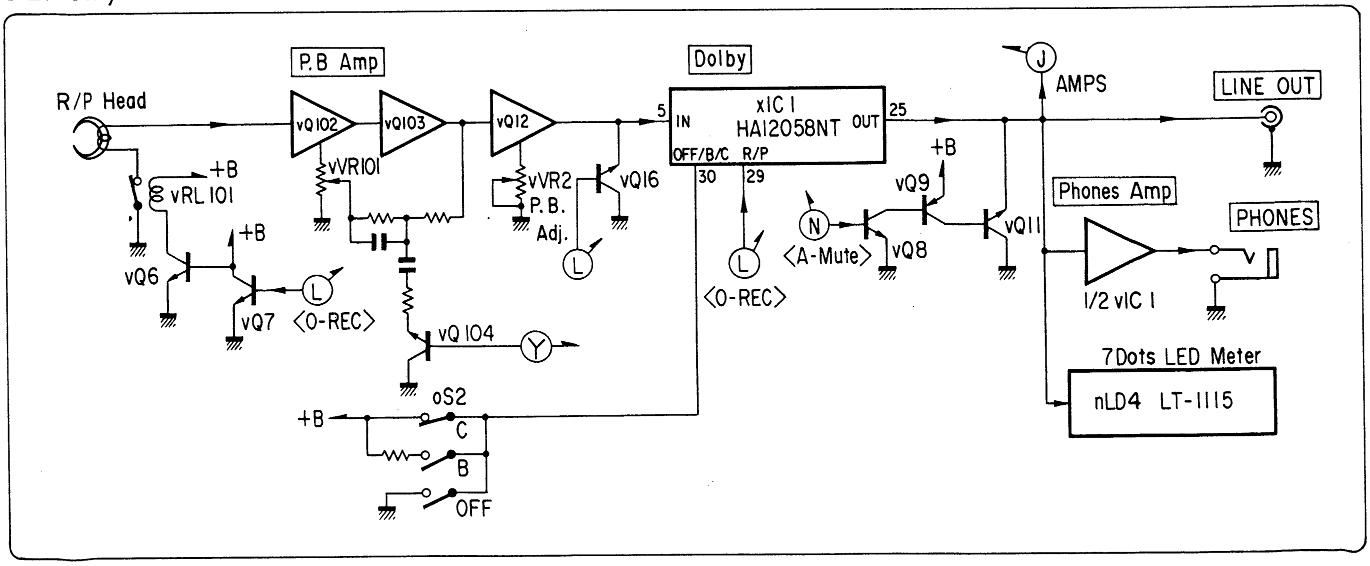
C.R. : Carbon Resistor
S.R. : Solid Resistor
Ce.R. : Cement Resistor
M.R. : Metal Film Resistor
F.R. : Fusing Resistor
N.I.R. : Non-Inflammable Resistor
A.R. : Array Resistor
C.C. : Ceramic Capacitor
C.T. : Ceramic Capacitor, Temoerature Compensation
E.C. : Electrolytic Capacitor
E.L. : Low Leak Electrolytic Capacitor
E.B. : Bi-Polar Electrolytic Capacitor
E.B.L. : Low Leak Bi-Polar Electrolytic Capacitor
Ta.C. : Tantalum Capacitor
F.C. : Film Capacitor
M.P. : Metalized Paper Capacitor
P.C. : Polystyrene Capacitor
G.C. : Gimmic Capacitor
A.C. : Array Capacitor
V.R. : Variable Resistor
S.V.R. : Semi Variable Resistor
SW. : Switch
Chip R. : Chip Resistor
Chip C. : Chip Capacitor

1. BLOCK DIAGRAM

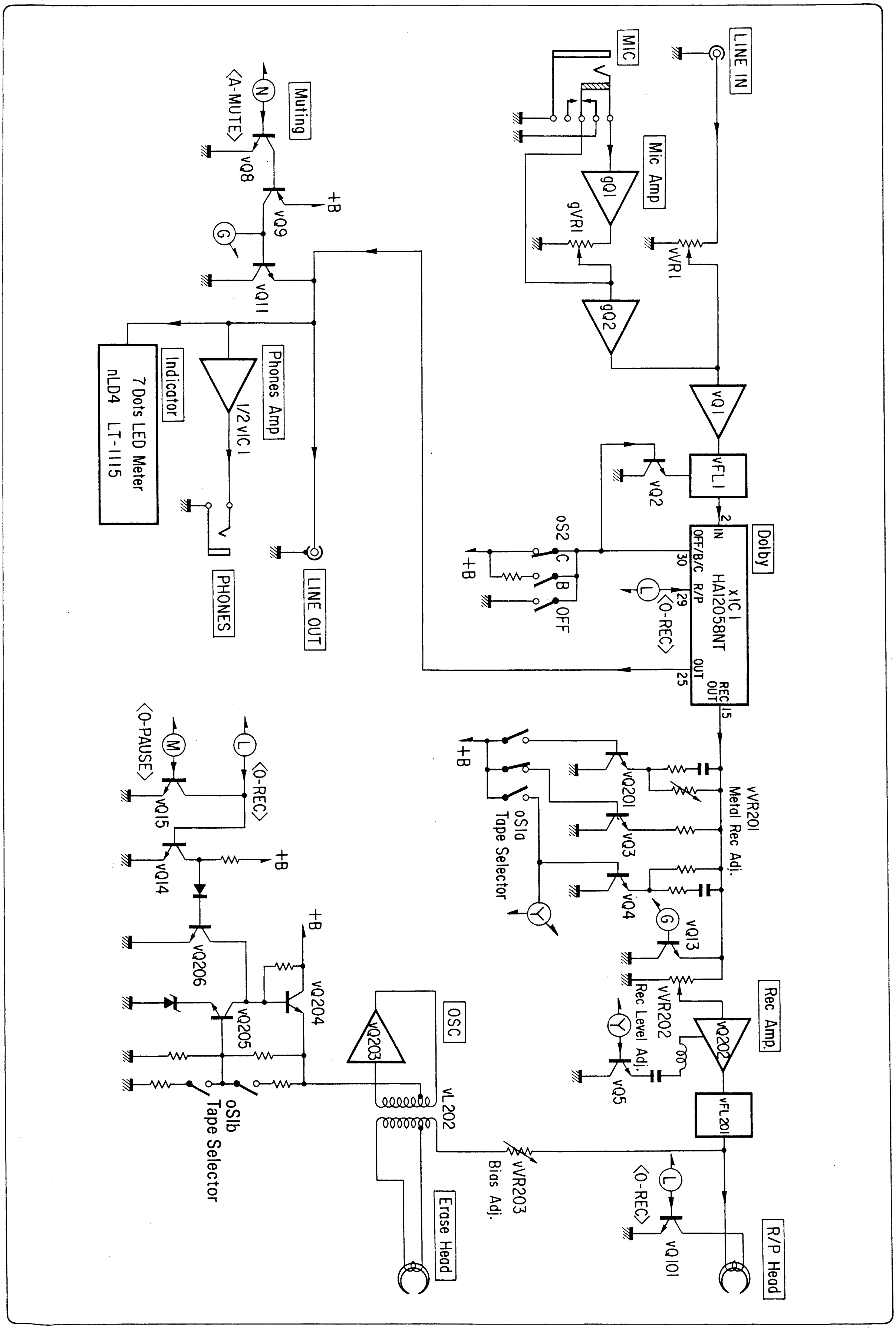
1-1. Logic Control Section


Brake Circuit
wQ2
5V
wQ3
Logic Control IC
wIC1
TC9310N-046
OSC
1 G
2 OSC
K
wQ11
Control SW
oPS1~6
5V
REW
FF
PLAY
REC
STOP
PAUSE
4~9
TIMER
oS3
PLAY
OFF
REC
5V
11 TIMER
tS2
12 REC SW
tS1
14 CASSETTE SW
Auto Stop
G
wQ1
13 AUTO STOP
AMPS
J
wQ10
15 AMPS
FF 27
H <FF>
REW 26
H <REW>
PLAY M 25
H <PLAY Speed>
Driver
3 AIN
wIC2
AOUT 8
2 BIN
BOUT 7
G 5
VCC 6
Reel Motor
M
tM2
G
Speed Change
12V
wQ5
12V
wQ6
12V
<Brake of FF,REW>
K
wQ7
<OSC of AMPS>
<FF,REW>
tPL1
PLAY SOL. 24
H <PLAY SOL.>
wQ4
12V
wQ8
PL START 23
<PLAY Start>
wQ9
INDICATOR
REC OUT 22
<0-REC>
L
PAUSE 21
<0-PAUSE>
M
PLAY IND. 20
<A-MUTE>
A-MUTE 19
N
nLD3
nLD2
nLD1

1-2. Playback Section <L-ch>


R/P Head
P.B Amp
vQ102
vQ103
vQ12
vVR101
+B
vRL101
vQ6
+B
vQ7
<0-REC>
L
vVR2
P.B. Adj.
vQ16
L
vQ104
Y
oS2
+B
C
B
OFF
Dolby
xIC1
HA12058NT
5 IN
OUT 25
OFF/B/C 30
R/P 29
L
<0-REC>
N
<A-Mute>
vQ8
+B
vQ9
vQ11
J
AMPS
LINE OUT
Phones Amp
1/2 vIC1
PHONES
7Dots LED Meter
nLD4 LT-1115

1-3. Recording Section <L-ch>


LINE IN
vVR1
MIC
Mic Amp
gQ1
gVR1
gQ2
vQ1
vFL1
vQ2
2
Dolby
xIC1
HA12058NT
IN
OFF/B/C
R/P
OUT
REC OUT
30
29
25
15
oS2
C
B
OFF
+B
L
<O-REC>
Muting
N
<A-MUTE>
vQ8
vQ9
+B
G
vQ11
Phones Amp
1/2 vIC1
Indicator
7 Dots LED Meter
nLD4 LT-1115
PHONES
LINE OUT
vVR201
Metal Rec Adj.
vQ201
vQ3
vQ4
+B
oS1a
Tape Selector
Y
G
vQ13
vVR202
Rec Level Adj.
Y
vQ5
Rec Amp.
vQ202
vFL201
L
<O-REC>
vQ101
R/P Head
vVR203
Bias Adj.
vL202
OSC
vQ203
Erase Head
L
<O-REC>
M
<O-PAUSE>
vQ15
vQ14
+B
vQ206
+B
vQ204
vQ205
oS1b
Tape Selector

2. MODE OPERATION & TIMING CHART OF IC TC9310N-046

•Mode Operation of IC TC9310N-046

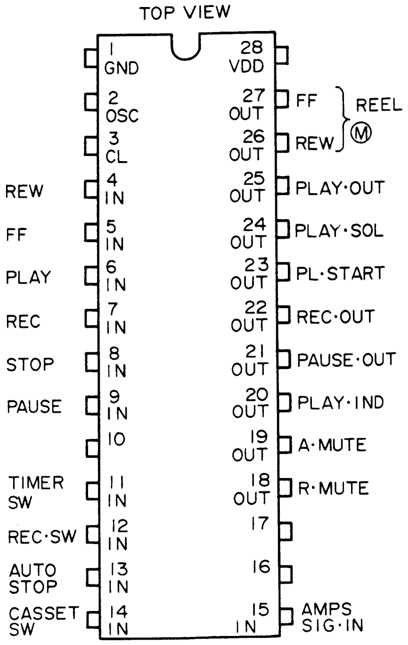
INPUT KEY / PRESENT MODE	STOP	PLAY	F.F	REW	REC	PAUSE	AUTO STOP	AMPS SIG.OFF
STOP	—	PLAY	F.F	REW	REC (—)	PAUSE	/	/
PLAY	STOP	—	CUE	REVIEW	—	PLAY.PAUSE	STOP	/
F.F	STOP	PLAY	—	REW	—	—	STOP	/
REW	STOP	PLAY	F.F	—	—	—	STOP	/
CUE	STOP	PLAY	—	REW	—	—	STOP	PLAY
REVIEW	STOP	PLAY	F.F	—	—	—	STOP	PLAY
REC	STOP	—	F.F	REW	—	REC.PAUSE	STOP	/
PAUSE	STOP	PLAY.PAUSE	F.F	REW	REC.PAUSE (—)	STOP	/	/
PLAY.PAUSE	STOP	—	F.F	REW	REC.PAUSE (—)	PLAY	/	/
REC.PAUSE	STOP	—	F.F	REW	—	REC	/	/

•Note: 1. This table shows operation when one input key is depressed on present mode.
2. CUE is in the state of PLAY mode under FF operation.
Review is in the state of PLAY mode under REW operation.

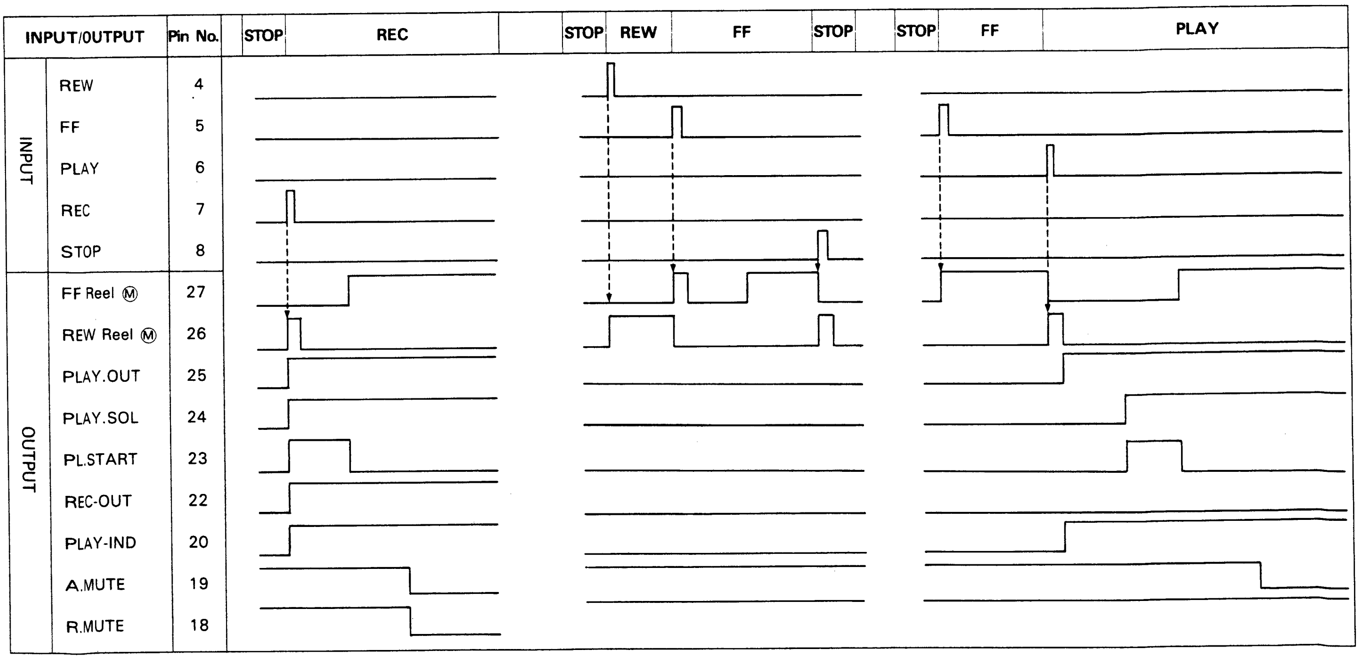
—— mark means continuing present mode.

/ mark means non relation with other input ports.

•Pin-connection

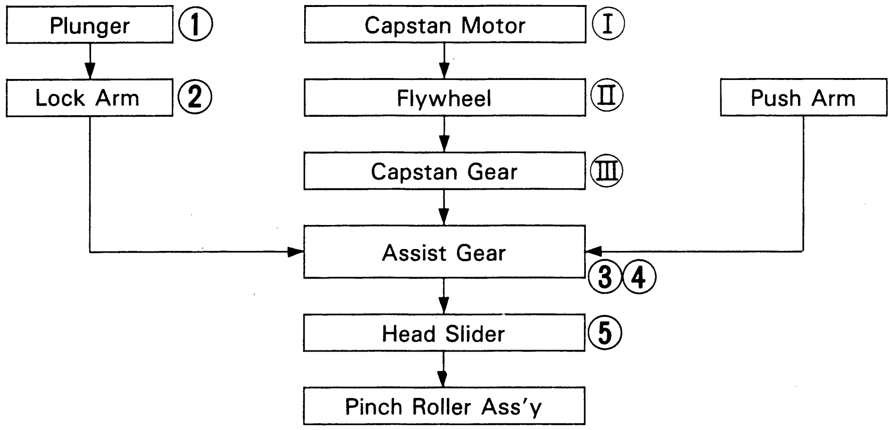

TOP VIEW
1 GND
28 VDD
2 OSC
27 OUT FF
REEL Ⓜ
3 CL
26 OUT REW
REW 4 IN
25 OUT PLAY·OUT
FF 5 IN
24 OUT PLAY·SOL
PLAY 6 IN
23 OUT PL·START
REC 7 IN
22 OUT REC·OUT
STOP 8 IN
21 OUT PAUSE·OUT
PAUSE 9 IN
20 OUT PLAY·IND
10
19 OUT A·MUTE
TIMER SW 11 IN
18 OUT R·MUTE
REC·SW 12 IN
17
AUTO STOP 13 IN
16
CASSET SW 14 IN
15 IN AMPS SIG·IN

•Microcomputer Timing Chart (REC, REW→FF→STOP, FF→PLAY)



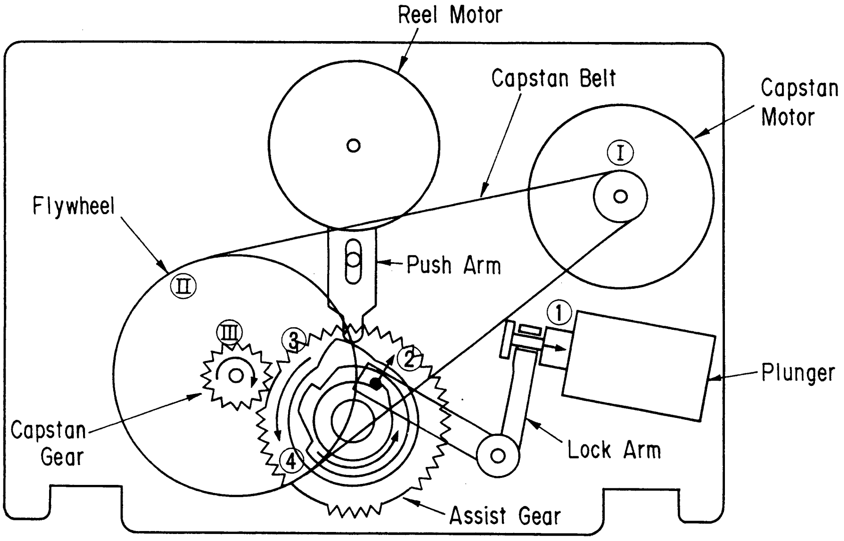
3. OPERATIONS OF PINCH ROLLER

3-1. Torque Transportation Flowchart

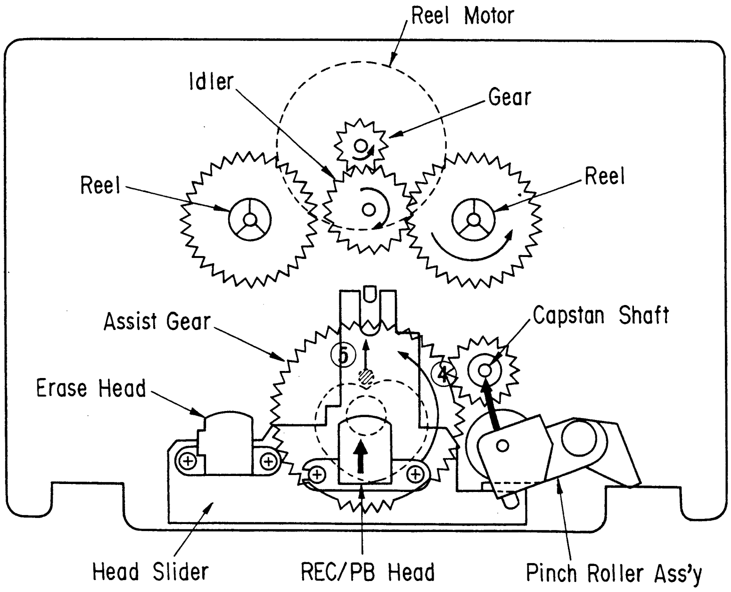

Plunger
①
Lock Arm
②
Capstan Motor
Ⅰ
Flywheel
Ⅱ
Capstan Gear
Ⅲ
Push Arm
Assist Gear
③④
Head Slider
⑤
Pinch Roller Ass'y

- The pinch roller is brought into pressure contact with the capstan shaft.

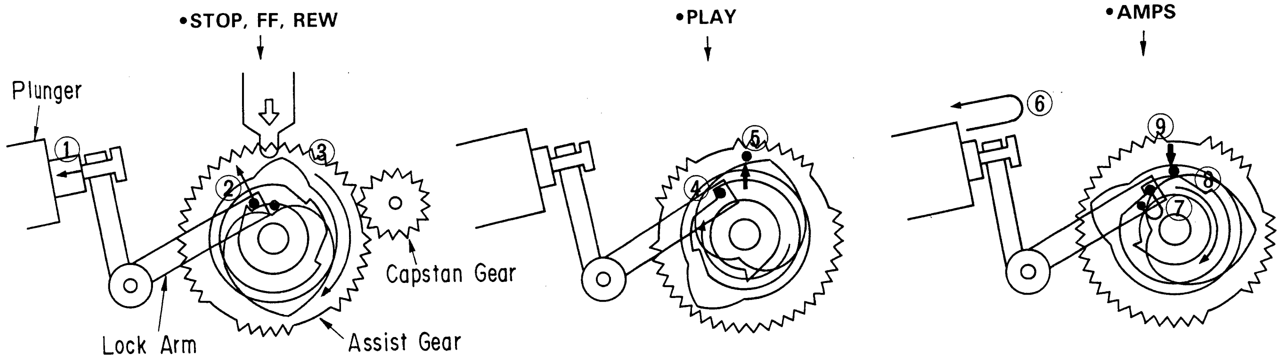
3-2. Rear View of Mechanism Chassis


Reel Motor
Capstan Belt
Capstan Motor
Ⅰ
Flywheel
Ⅱ
Push Arm
Ⅲ
③
②
①
Plunger
Capstan Gear
Lock Arm
④
Assist Gear

3-3. Front View of Mechanism Chassis

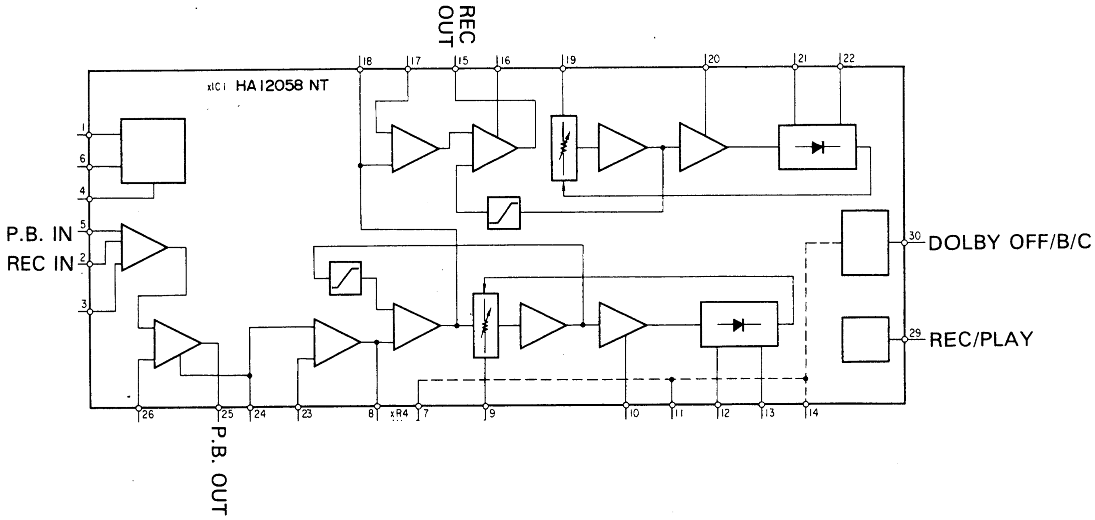

Reel Motor
Idler
Gear
Reel
Reel
Assist Gear
Capstan Shaft
⑤
④
Erase Head
Head Slider
REC/PB Head
Pinch Roller Ass'y

3-4. Cam Positions in the Modes of PLAY, FF, REW & STOP

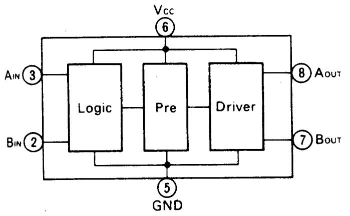

•STOP, FF, REW
•PLAY
•AMPS
Plunger
①
②
③
④
⑤
⑥
⑦
⑧
⑨
Capstan Gear
Lock Arm
Assist Gear

4. INTERIOR BLOCK DIAGRAM OF IC

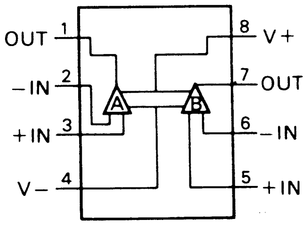
•HA12058NT (Dolby Noise Reduction IC)


REC OUT
xIC1 HA12058 NT
18
17
15
16
19
20
21
22
1
6
4
5
2
3
P.B. IN
REC IN
30
DOLBY OFF/B/C
29
REC/PLAY
26
25
24
23
8
xR4
7
9
10
11
12
13
14
P.B. OUT

•BA6208 (Motor Drive IC)


Vcc
⑥
Ain ③
Bin ②
Logic
Pre
Driver
⑧ Aout
⑦ Bout
⑤
GND

•M5218P (OP AMP. IC)


OUT 1
−IN 2
+IN 3
V− 4
8 V+
7 OUT
6 −IN
5 +IN
A
B

5. ADJUSTMENTS

5-1. Tape Speed Adjustment

Note: 1. Use Sansui Test Tape, SCT-S3K (3 kHz signal is recorded on the tape).
2. Connections are shown in Fig. 5-1.
3. Remove the cassette lid. (See Fig.10-2 on page 15)

Fig. 5-1

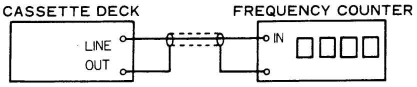
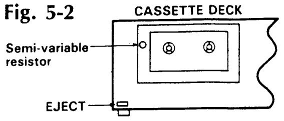

CASSETTE DECK
FREQUENCY COUNTER
LINE OUT
IN

Fig. 5-2


CASSETTE DECK
Semi-variable resistor
EJECT

STEP	SUBJECT	MEASURE OUTPUT	SETTING	ADJUSTMENT	ADJUST FOR	REMARKS
1.	Tape Speed Adj.	LINE OUT Frequency counter	Playback the Test Tape SCT-S3K.	Turn semi-variable resistor as Fig. 5-2	3000Hz±45Hz	Use small screw driver

5-2. Playback Adjustment

Note: 1. Before this adjustment, clean REC/P.B. head surface.
2. For this adjustment, use Sansui Test Tape, SCT-F10K, and SCT-L400N.
3. Connections are shown in Fig. 5-3.
4. DOLBY NR.. OFF
5. Remove the cassette lid. (See Fig. 10-2 on page 15)

Fig. 5-3

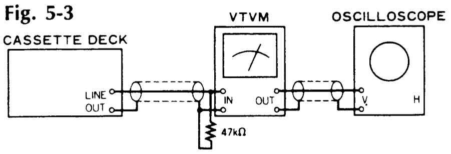
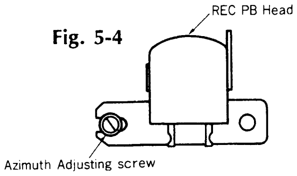

CASSETTE DECK
VTVM
OSCILLOSCOPE
LINE OUT
IN
OUT
V
H
47kΩ

Fig. 5-4


REC PB Head
Azimuth Adjusting screw

STEP	SUBJECT	MEASURE OUTPUT	SETTING	ADJUSTMENT	ADJUST FOR	REMARKS
1.	REC/P.B. Head Adj.	LINE OUT VTVM and Scope	Set TAPE SELECTOR to NORMAL Playback the TEST TAPE SCT-F10K	Adjust the azimuth adjusting screw in Fig. 5-4.	Maximum output from L and R-ch	After this adjustment, lock the screw with paint.
2.	Playback Level Pre Adj.	Between Point Ⓐ/Ⓑ (vC14) & GND VTVM and Scope	Set TAPE SELECTOR to NORMAL Playback the TEST TAPE SCT-L400N	Adjust each vVR101 (F-4430) of L-CH and R-CH	10mV±2dB	See Top View on page 12.
3.	Playback Level Adj.	LINE OUT VTVM and Scope	Same as above	Adjust each vVR2 (F-4440) of L-CH and R-CH	500mV±2dB	See Top View on page 12.

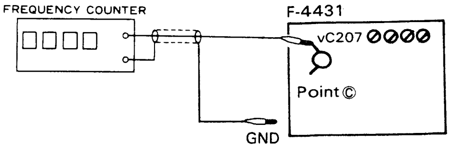
5-3. Recording Adjustment

1) Bias Frequency Adjustment

* Perform this adjustment when bias pot or REC/P.B. head replaced.

Note: 1. For this adjustment, use Sansui Test Tape, SCT-MA.
2. Connections are shown in Fig. 5-5.
3. DOLBY NR... OFF

Fig. 5-5

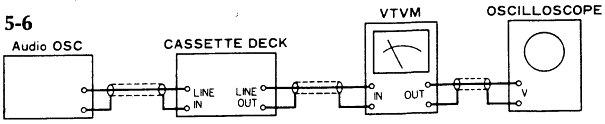

FREQUENCY COUNTER
F-4431
vC207
Point Ⓒ
GND

STEP	SUBJECT	MEASURE OUTPUT	SETTING	ADJUSTMENT	ADJUST FOR	REMARKS
1.	Bias Frequency Adj.	Between Point Ⓒ (vC207) & GND Frequency counter	Load Test Tape SCT-MA and set TAPE SELECTOR to METAL. Depress REC button.	Adjust vL202 (F-4431)	85kHz±5kHz	See Top View on page 12.

2) REC Level & Frequency Response Adjustment

Note: 1. Connections are shown in Fig. 5-6.
2. DOLBY NR.. OFF
3. REC LEVEL...................................... Maximum

Fig. 5-6



STEP	SUBJECT	INPUT SIGNAL	MEASURE OUTPUT	SETTING	ADJUSTMENT	REMARKS
1.	REC Level Adj.	Feed 1kHz, 150mV from S.G. into LINE IN.	LINE OUT, VTVM and Scope	Load the Test Tape SCT-SA and set TAPE SELECTOR to HIGH. 1. Depress PAUSE and REC button. 2. Adjust the Audio S.G. output level for obtaining 230mV on VTVM. 3. Push off the PAUSE button, then record the 1kHz signal. 4. Play back the 1kHz signal. 5. Confirm that the output levels on both channels are 230mV ±2dB on VTVM.	1. If not, turn each vVR202 (F-4431) of L-CH and R-CH until output level 230mV±2dB on both channels are obtained.	See Top View on page 12.
2.	Frequency Response (BIAS) Adj.	Feed 1kHz 15mV (−20dB) and 10kHz 15mV (−20dB) from S.G. into LINE IN.	Seme as above	Load the Test Tape SCT-SA and set TAPE SELECTOR to HIGH. 1. Record the 1kHz and 10kHz signals from S.G. 2. Play back the 1kHz and 10kHz signals, then confirm that both output levels equal.	1. If not, adjust each vVR203 (F-4431) of L-CH and R-CH slightly until the output levels will be equal.	See Top View on page 12.
3.	Metal REC Level Adj.	Feed 1kHz 150mV from S.G. into LINE IN.	LINE OUT VTVM and Scope	Load the Test Tape SCT-MA and set TAPE SELECTOR to METAL. 1. Depress PAUSE and REC button. 2. Adjust the Audio S.G. output level for obtaining 230mV on VTVM. 3. Push off the PAUSE button, then record the 1kHz signal. 4. Play back the 1kHz signal. 5. Confirm that the output levels on both channels are 230mV ±2dB on VTVM.	1. If not, adjust each vVR201 (F-4431) of L-CH and R-CH until output level 230mV±2dB on both channels are obtained.	See Top View on page 12.

◆ List of Sansui Test Tape

Name of TEST TAPE	Recorded Frequency	Description	Equivalent To
SCT-F40	40 Hz	Playback Frequency Response Check	–
SCT-F1K	1 kHz	High Frequency Equalization Check	–
SCT-F10K	10 kHz	REC/PB Head Adjustment	–
SCT-L400N	400 Hz	Playback Level and Indicator Level Adjustment	–
SCT-S3K	3 kHz	Speed Check and Wow & Flutter Check	–
*SCT-AD NORMAL	–	Recording Bias Adjustment	TDK AD
*SCT-SA HIGH	–	REC/PB Level Adjustment	TDK SA
*SCT-MA (METAL)	–	Frequency Response Check	TDK MA

•Note: Some reference tapes marked * are not supplied.
As these are equivalent to ones indicated above, please obtain these blank tapes on your side as possible.

◆ TAPE SELECTOR Position

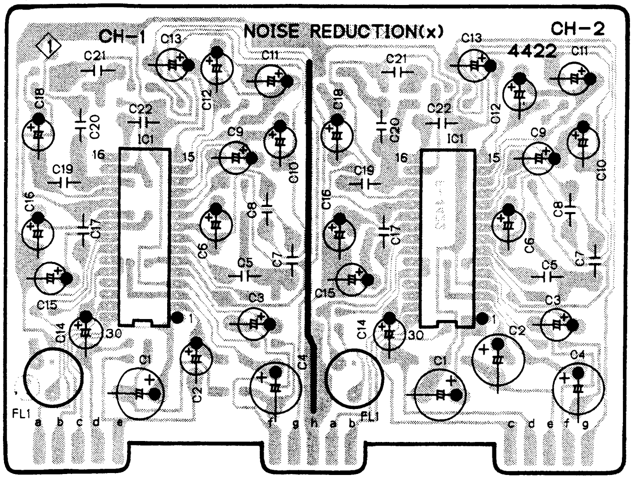
NORMAL	
FUJI	FL, FXI
MAXELL	UL, UD, XL I, XL I-S
TDK	D, AD, OD
SCOTCH	TARTAN CRYSTAL MASTER 120
SONY	AHF, BHF, CHF Low-Noise
AGFA	SUPER SUPER COLOR SUPER FERRO DYNAMIC
BASF	LN Super LH I

HIGH	
FUJI	FX II
MAXELL	XL II, XL II-S
TDK	SA, SA-X
SCOTCH	MASTER 70
SONY	JHF
AGFA	STEREO CHROM
BASF	SCR
METAL	
MAXELL	MX
TDK	MA-R, MA
SCOTCH	Metafine
SONY	METALLIC

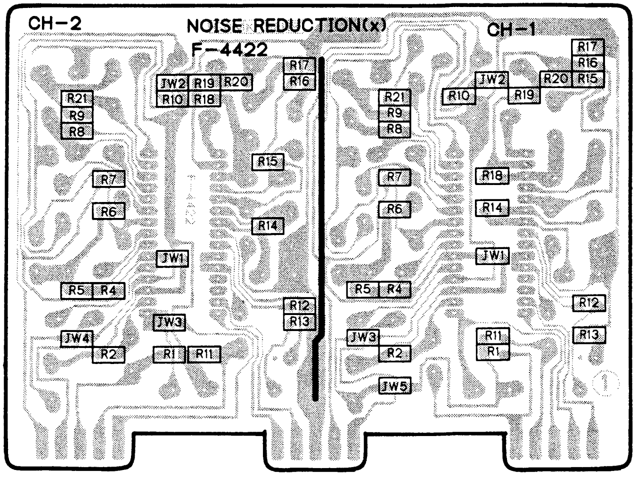
6. PARTS LOCATION & PARTS LIST

6-1. F-4422 Noise Reduction Circuit Board (Stock No. 00777801)

Top View (Component Side) with Bottom Side Pattern


CH-1
NOISE REDUCTION(x)
CH-2
4422
C21
C13
C11
C18
C12
C20
C22
IC1
C9
C10
C19
C16
C17
C8
C6
C7
C5
C3
C15
C14
C1
C2
C4
C30
FL1
16
15
1
30
a b c d e
f g h a b
c d e f g

Chip Parts View with Bottom Side Pattern

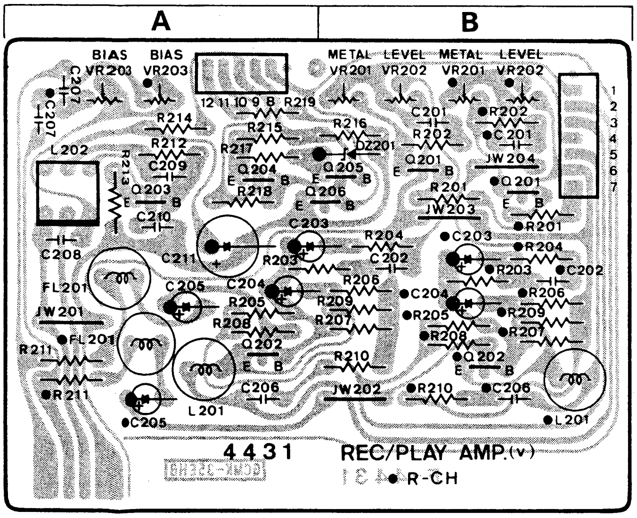

CH-2
NOISE REDUCTION(x)
F-4422
CH-1
R17
R16
R15
JW2
R19
R20
R10
R18
R21
R9
R8
R7
R6
R14
JW1
R5
R4
R12
R13
JW3
JW4
R2
R1
R11
JW5

Parts List

Parts No.	Stock No.	Description
•IC		
xIC1	46671900	HA12058NT
xJW1	46741100	Cross Conductor (Chip)
xJW2	46741100	Cross Conductor (Chip)
xJW3	46741100	Cross Conductor (Chip)
xJW4	46741100	Cross Conductor (Chip)
xJW5	46741100	Cross Conductor (Chip)
xR1	46754000	470kΩ 1/8W Chip R.
xR2	46749400	5.6kΩ 1/8W Chip R.
xR4	46749800	8.2kΩ 1/8W Chip R.
xR5	46748800	3.3kΩ 1/8W Chip R.
xR6	46750900	24kΩ 1/8W Chip R.
xR7	46749500	6.2kΩ 1/8W Chip R.
xR8	46752200	82kΩ 1/8W Chip R.
xR9	46754800	1MΩ 1/8W Chip R.
xR10	46752200	82kΩ 1/8W Chip R.
xR11	46752200	82kΩ 1/8W Chip R.
xR12	46748800	3.3kΩ 1/8W Chip R.
xR13	46747600	1kΩ 1/8W Chip R.
xR14	46752200	82kΩ 1/8W Chip R.
xR15	46749500	6.2kΩ 1/8W Chip R.
xR16	46752200	82kΩ 1/8W Chip R.
xR17	46746800	470Ω 1/8W Chip R.
xR18	46749200	4.7kΩ 1/8W Chip R.
xR19	46750000	10kΩ 1/8W Chip R.
xR20	46752000	68kΩ 1/8W Chip R.
xR21	46754800	1MΩ 1/8W Chip R.
xFL1	46177600	TRAP FILTER, 19.8kHz

6-2. F-4431 Rec Amp Circuit Board (Stock No. 00779001)

Component Side


A
B
BIAS
BIAS
VR203
VR203
METAL
LEVEL
METAL
LEVEL
VR201
VR202
VR201
VR202
C207
12 11 10 9 8
R219
R214
R215
R216
C201
R202
C201
R212
R217
DZ201
R202
L202
R213
C209
Q204
Q205
Q201
JW204
Q203
R218
Q206
R201
Q201
C210
JW203
C203
R204
C203
C208
C211
R203
C202
R204
R203
C202
FL201
C205
C204
R206
C204
R206
JW201
R205
R209
R205
R209
R208
R207
R208
R207
R211
FL201
Q202
R210
Q202
R211
C206
JW202
R210
C206
C205
L201
L201
E B
1 2 3 4 5 6 7
4431
REC/PLAY AMP.(v)
R-CH

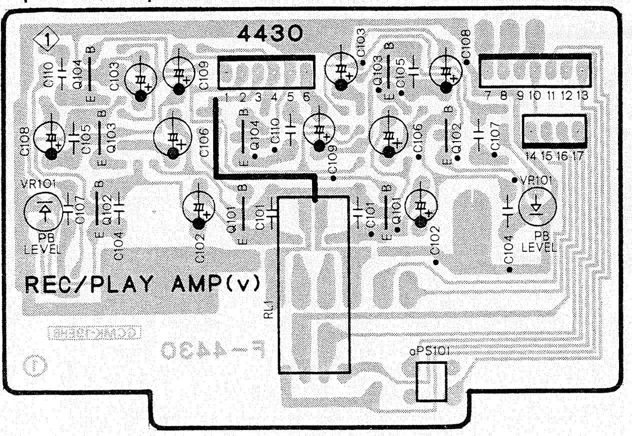
•**Note:** On this circuit board, the left channel is specified by "●" mark on top of the parts No.

Parts List

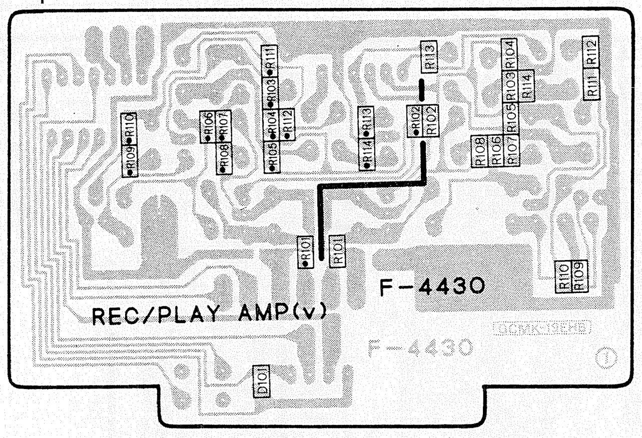
Parts No.	Stock No.	Description
•Transistor		
vQ201	46367101	2SC2603
	or 46391901	2SC2785
vQ202	46367101	2SC2603
	or 46391901	2SC2785
vQ203	46725801	2SC1627A
vQ204	03086101	2SD357
vQ205	46367101	2SC2603
	or 46391901	2SC2785
vQ206	46367101	2SC2603
	or 46391901	2SC2785
•Zener Diode		
vDZ201	46109400	05Z3.0-Y
vC208	46657000	3900pF 100V F.C.
vFL201	42904400	Peaking Coil
vL201	46313900	Inductor 2.7mH
vL202	46362200	Bias OSC Coil
vVR201	07262200	100kΩ(B) S.V.R., Metal Rec Level Adj.
vVR202	07262100	50kΩ(B) S.V.R., Rec Level Adj.
vVR203	07262200	100kΩ(B) S.V.R., Bias Adj.

6-3. F-4430 Playback Amp Circuit Board (Stock No. 00778901)

Top View (Component Side) with Bottom Side Pattern


4430
REC/PLAY AMP(v)
VR101
PB LEVEL
RL1
oPS101
Q101
Q102
Q103
Q104
1 2 3 4 5 6
7 8 9 10 11 12 13
14 15 16 17

Chip Parts View with Bottom Side Pattern


REC/PLAY AMP(v)
F-4430
R101
R102
R103
R104
R105
R106
R107
R108
R109
R110
R111
R112
R113
R114
D101

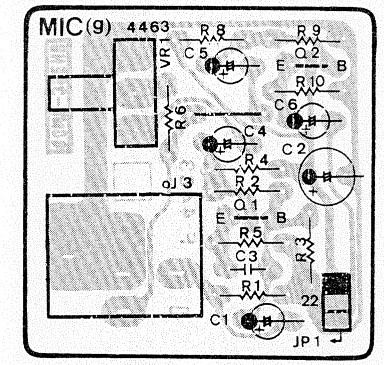
Parts List

Parts No.	Stock No.	Description
•Transistor		
vQ101	46359801	2SC2001
vQ102	46577801	2SC2320L
vQ103	46577801	2SC2320L
vQ104	46367101	2SC2603
	or 46391901	2SC2785
•Diode		
vD101	46852000	RLS-73
vR101	46742800	10Ω 1/8W Chip R.
vR102	46749200	4.7kΩ 1/8W Chip R.
vR103	46753200	220kΩ 1/8W Chip R.
vR104	46751600	47kΩ 1/8W Chip R.
vR105	46750400	15kΩ 1/8W Chip R.

Parts No.	Stock No.	Description
vR106	46753200	220kΩ 1/8W Chip R.
vR107	46744000	33Ω 1/8W Chip R.
vR108	46747800	1.2kΩ 1/8W Chip R.
vR109	46746800	470Ω 1/8W Chip R.
vR110	46752800	150kΩ 1/8W Chip R.
vR111	46748600	2.7kΩ 1/8W Chip R.
vR112	46748400	2.2kΩ 1/8W Chip R.
vR113	46750000	10kΩ 1/8W Chip R.
vR114	46753200	220kΩ 1/8W Chip R.
vVR101	46839300	1kΩ S.V.R., P.B Level Adj.
vRL101	11504700	Relay
	or 11504701	Relay

6-4. F-4463 Mic Amp Circuit Board (Stock No. 00783701)

Component Side

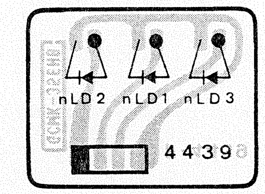

MIC(9)
4463
VR1
R6
R8
R9
R10
C5
C6
C4
C2
R4
Q2
Q1
oJ3
R5
C3
R1
C1
22
JP1

Parts List

Parts No.	Stock No.	Description
•Transistor		
gQ1	46367101	2SC2603
	or 46391901	2SC2785
gQ2	46367101	2SC2603
	or 46391901	2SC2785
gVR1	07106701	20kΩ(A) V.R., MIC
oJ3	46502200	JACK, MIC

6-5. F-4439 Rec, Play & Pause Indi. Circuit Board

Component Side

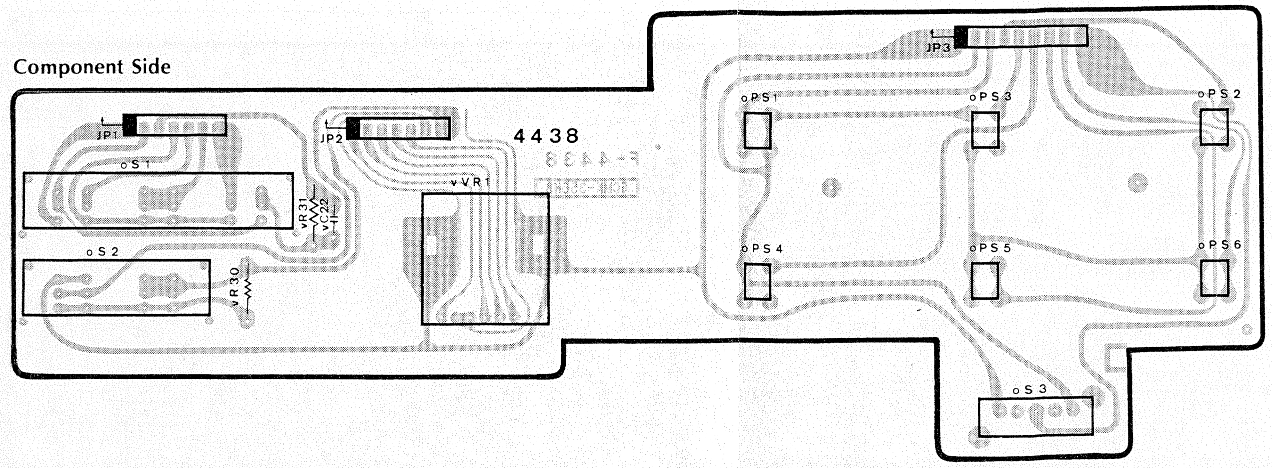

nLD2
nLD1
nLD3
4439

Parts List

Parts No.	Stock No.	Description
•LED		
nLD1	46176900	TLS-123
nLD2	07251000	TLY-123
nLD3	07250900	TLG-123A

6-6. F-4438 Control SW. Circuit Board

Component Side


4438
JP1
JP2
JP3
oS1
oS2
oS3
vVR1
vR31
vR30
oPS1
oPS2
oPS3
oPS4
oPS5
oPS6

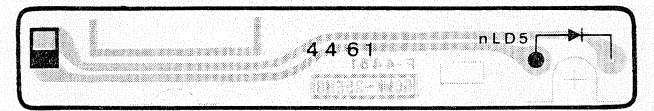
Parts List

Parts No.	Stock No.	Description
oPS1	46133300	Push SW., REW
oPS2	46133300	Push SW., F.FWD
oPS3	46133300	Push SW., PLAY
oPS4	46133300	Push SW., REC
oPS5	46133300	Push SW., STOP
oPS6	46133300	Push SW., PAUSE

Parts No.	Stock No.	Description
oS1	46917200	Push SW., TAPE SELECTOR
oS2	46916900	Push SW., DOLBY NR SYSTEM
oS3	46178400	Silde SW., TIMER
vVR1	46917400	50kΩ V.R., REC LEVEL

6-7. F-4461 Indicator Circuit Board

Component Side

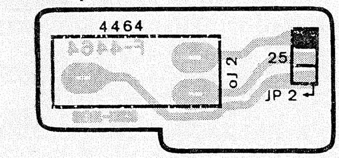


Parts List

Parts No.	Stock No.	Description
•LED		
nLD5	46921900	LD-702GG

6-8. F-4464 Phones Jack Circuit Board

Component Side

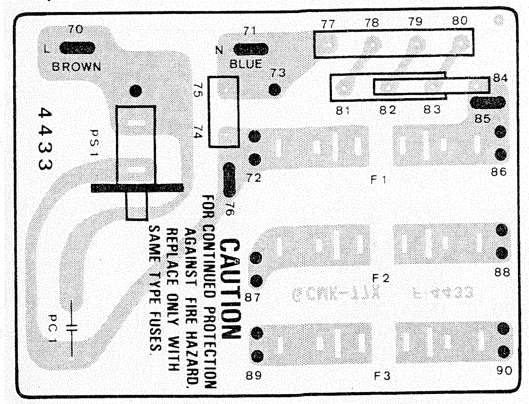

4464
oJ2
25
JP2

Parts List

Parts No.	Stock No.	Description
oJ2	46265700	JACK, PHONES

6-9. F-4433 Power SW. Circuit Board

Component Side

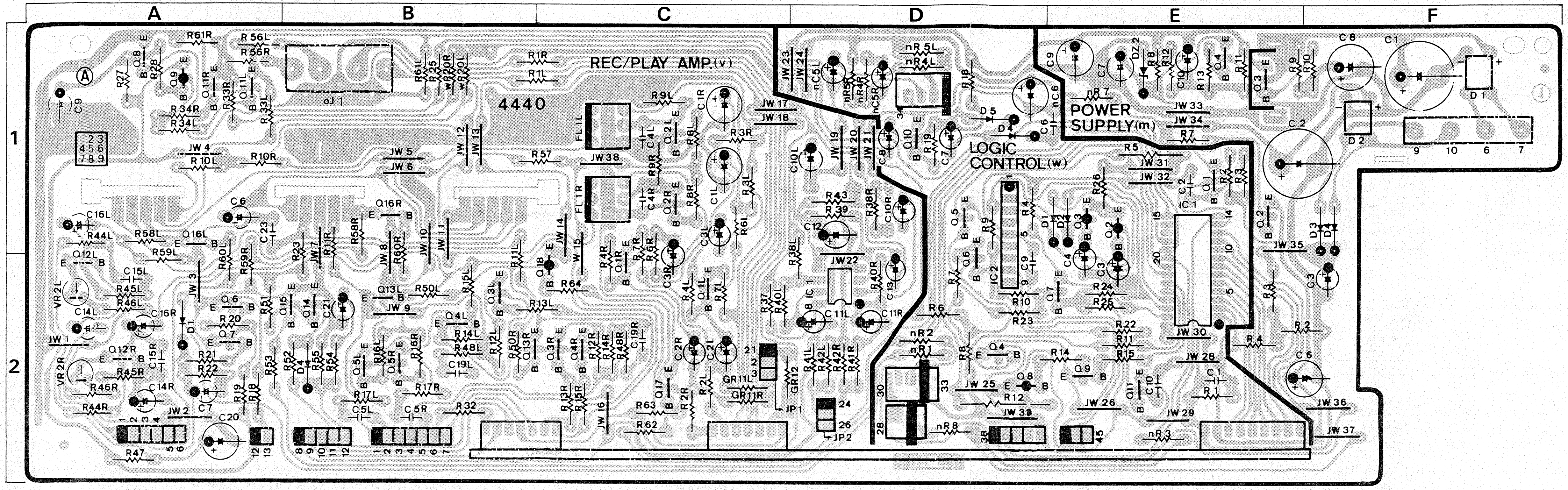

4433
L
BROWN
N
BLUE
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
pS1
pC1
F1
F2
F3
CAUTION
FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE FUSES.

Parts List

Parts No.	Stock No.	Description
⚠ pC1	46425800	0.01μF 400V C.C.
⚠ pS1	46360300	Push SW., POWER

6-10. F-4440 Main Circuit Board (Stock No. 00779201)

Component Side

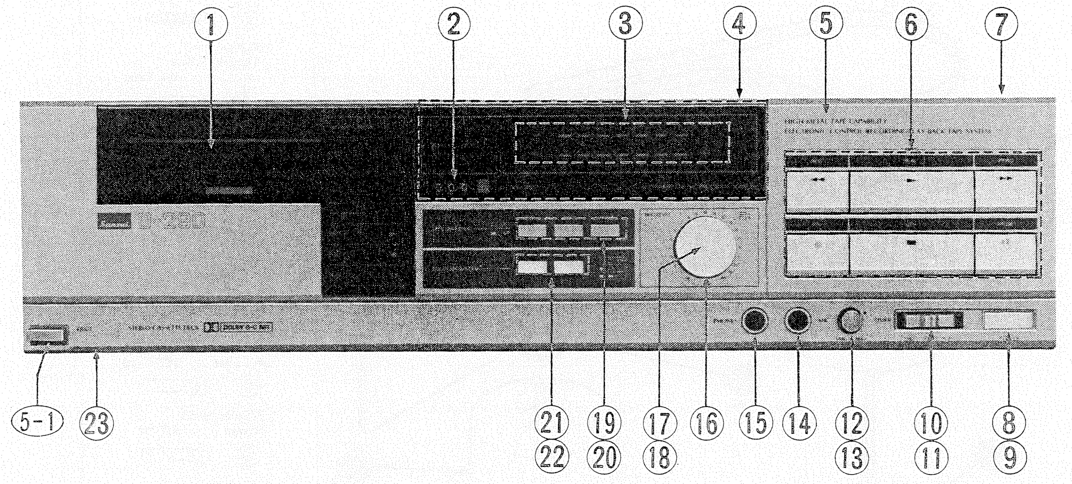


Parts List

Parts No.	Stock No.	Description
•Transistor		
⚠ mQ2	03085201	2SD438
⚠ mQ3	03083901	2SD313AL
mQ4	46367101	2SC2603
	or 46391901	2SC2785
•Diode		
⚠ mD1	46273600	DBB10-B
⚠ mD2	46273600	DBB10-B
⚠ mD3	03117600	1S2473T77
⚠	or 46086000	1S1588TP-3
⚠ mD4	03117600	1S2473T77
⚠	or 46086000	1S1588TP-3
•Zener Diode		
mDZ2	46111500	05Z5.6-Y
⚠ mR7	00135300	47Ω 1/2W N.I.R.
oJ1	46371500	4P TERMINAL BOARD, LINE IN/ LINE OUT
•Transistor		
vQ1	46367101	2SC2603
	or 46391901	2SC2785
vQ2	46367101	2SC2603
	or 46391901	2SC2785
vQ3	46367101	2SC2603
	or 46391901	2SC2785
vQ4	46367101	2SC2603
	or 46391901	2SC2785
vQ5	46367101	2SC2603
	or 46391901	2SC2785
vQ6	46367101	2SC2603
	or 46391901	2SC2785
vQ7	46367101	2SC2603
	or 46391901	2SC2785
vQ8	46367101	2SC2603
	or 46391901	2SC2785
vQ9	46367001	2SA1115
	or 46392001	2SA1175
vQ11	46367101	2SC2603
	or 46391901	2SC2785
vQ12	46367101	2SC2603
	or 46391901	2SC2785
vQ13	46367101	2SC2603
	or 46391901	2SC2785
vQ14	46367101	2SC2603
	or 46391901	2SC2785
vQ15	46367101	2SC2603
	or 46391901	2SC2785
vQ16	46367101	2SC2603
	or 46391901	2SC2785
•IC		
vIC1	46580100	M5218P
•Diode		
vD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
vD4	03117600	1S2473T77
	or 46086000	1S1588TP-3
⚠ vR18	46681300	10Ω 1/4W F.R.
vFL1	46177500	Dolby Filter
vVR2	46839200	470Ω S.V.R., P.B Level Adj.
•Transistor		
wQ1	46367101	2SC2603
	or 46391901	2SC2785
wQ2	46719800	DTA124
wQ3	46719800	DTA124
wQ4	46359801	2SC2001
wQ5	03085201	2SD438
wQ6	46367101	2SC2603
	or 46391901	2SC2785
wQ7	46367101	2SC2603
	or 46391901	2SC2785
wQ8	46359701	2SA952
wQ9	46367101	2SC2603
	or 46391901	2SC2785
wQ10	46367101	2SC2603
	or 46391901	2SC2785
wQ11	46367101	2SC2603
	or 46391901	2SC2785
•IC		
wIC1	46916800	TC9310N-046
wIC2	46149600	BA6208
•Diode		
wD1	03117600	1S2473T77
	or 46086000	1S1588TP-3
wD2	03117600	1S2473T77
	or 46086000	1S1588TP-3
wD4	03117600	1S2473T77
	or 46086000	1S1588TP-3
wD5	03117600	1S2473T77
	or 46086000	1S1588TP-3
⚠ wR5	46242000	47Ω 1W N.I.R.
⚠ wR12	00191900	82Ω 2W N.I.R.

7. OTHER PARTS

7-1. Front View


①
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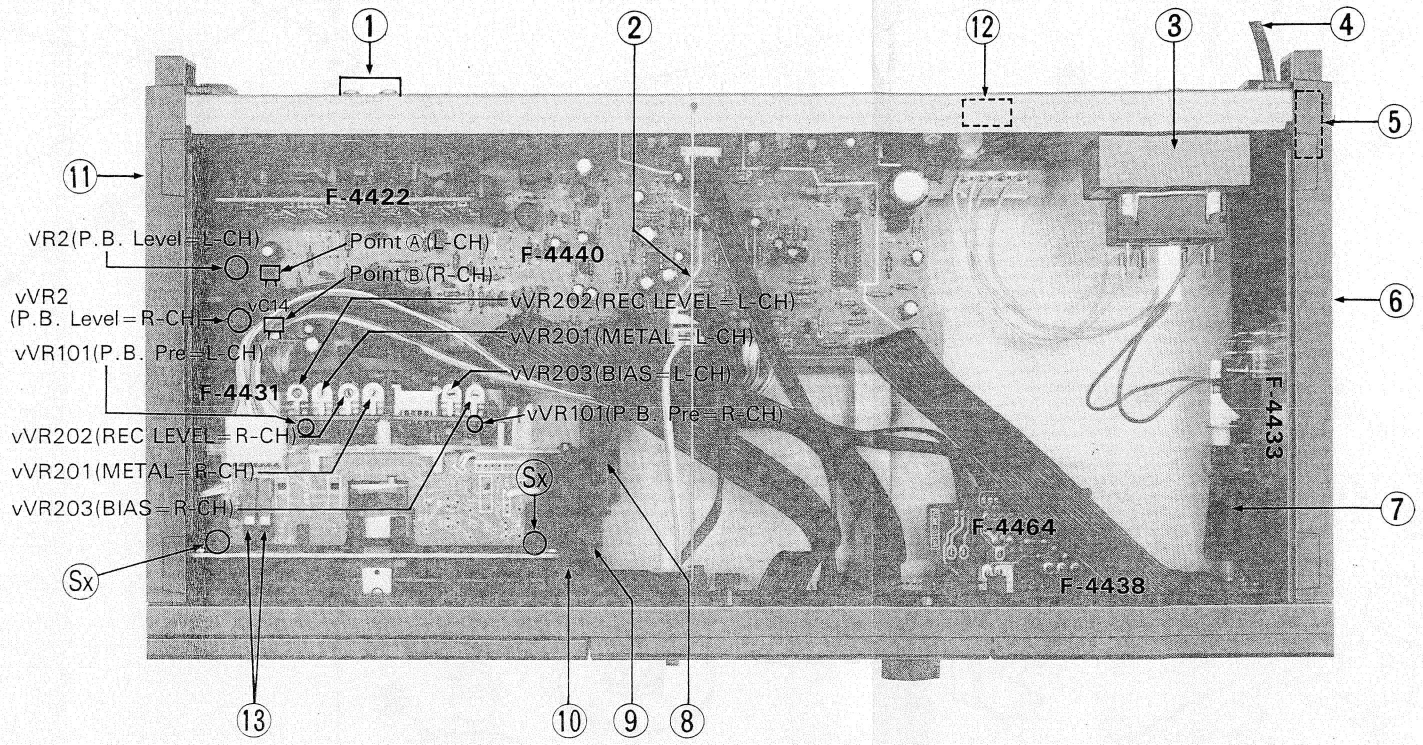
Parts List

Parts No.	Stock No.	Description
<Common Parts>		
2	46899300	Tape Counter
3	46917500	LED LEVEL METER (LT-1115)
4	47484200	Meter Window Cover
5-1	47350900	Knob, EJECT
6	46133300	Push SW., REW, F.FWD, PLAY, REC, STOP, PAUSE
8	47257100	Knob, POWER
⚠ 9	46360300	Push SW., POWER
10	47353000	Slide Knob, TIMER
11	46178400	Slide SW., TIMER
13	07106701	20kΩ(A) V.R., MIC
14	46502200	Jack, MIC
15	46265700	Jack, PHONES
18	46917400	50kΩ V.R., REC LEVEL
19	47353200	Knob, TAPE SELECTOR
20	46917200	Push SW., TAPE SELECTOR
21	47353100	Knob, DOLBY NR SYSTEM
22	46916900	Push SW., DOLBY NR SYSTEM
23	47352100	Spring, EJECT
<Silver Model>		
1	47379000	Cassette Lid Ass'y
5	47427600	Front Panel Ass'y
7	47338600	Bonnet
12	47496000	Knob, MIC
16	47256610	Knob, REC LEVEL (L)
17	47502400	Knob, REC LEVEL (R)
<Black Model>		
1	47379100	Cassette Lid Ass'y
5	47427700	Front Panel Ass'y
7	47352300	Bonnet
12	07680600	Knob, MIC
16	47427400	Knob, REC LEVEL (L)
17	47502500	Knob, REC LEVEL (R)

7-2. Top View

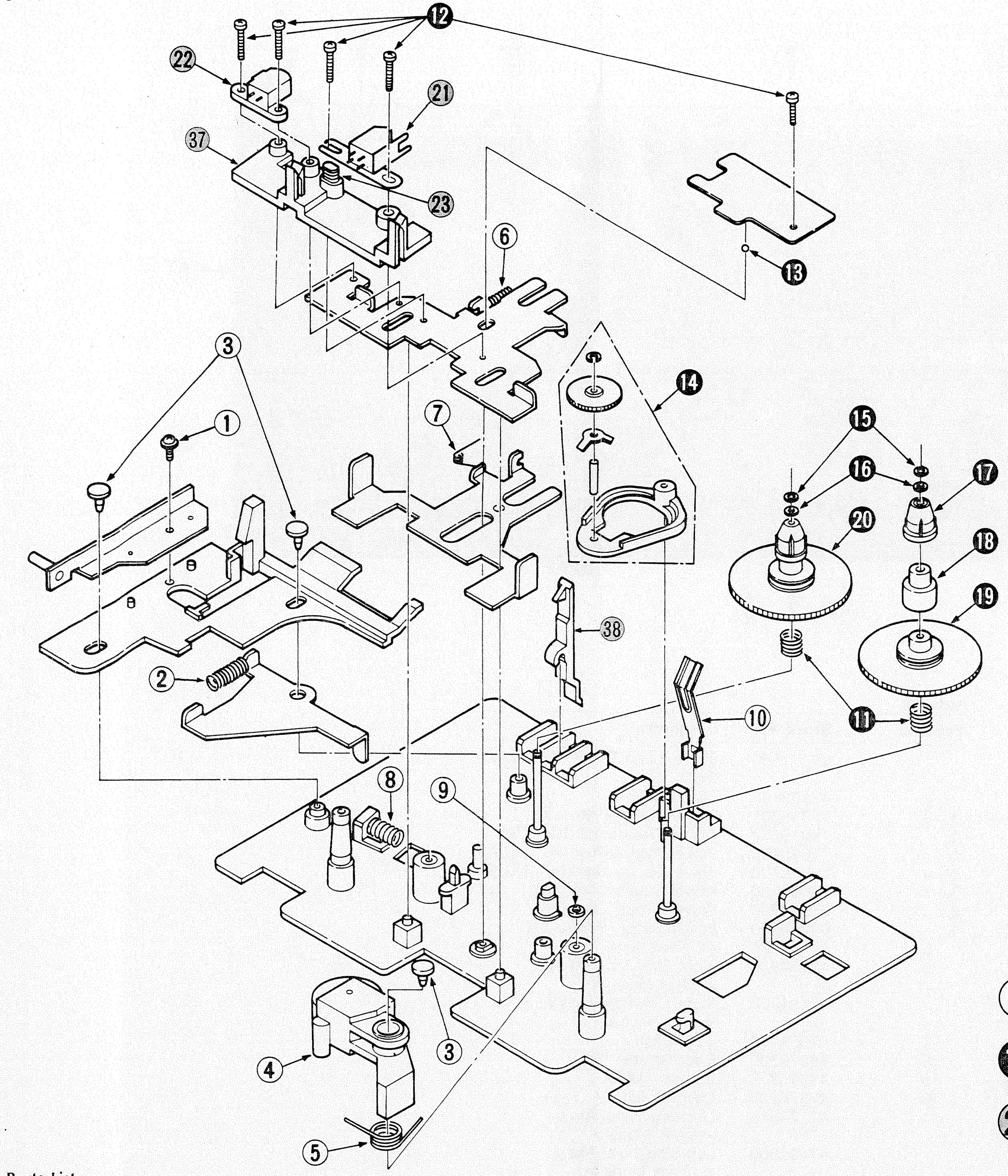

①
②
⑫
③
④
⑤
⑥
⑦
⑪
F-4422
F-4440
F-4431
F-4433
F-4464
F-4438
VR2(P.B. Level=L-CH)
Point Ⓐ(L-CH)
Point Ⓑ(R-CH)
vVR2
(P.B. Level=R-CH)
vC14
vVR101(P.B. Pre=L-CH)
vVR202(REC LEVEL=L-CH)
vVR201(METAL=L-CH)
vVR203(BIAS=L-CH)
vVR101(P.B. Pre=R-CH)
vVR202(REC LEVEL=R-CH)
vVR201(METAL=R-CH)
vVR203(BIAS=R-CH)
Sx
Sx
⑬
⑩
⑨
⑧

Parts List

Parts No.	Stock No.	Description
1	46371500	4P Terminal Board, LINE IN/LINE OUT
2	47103100	Tention Wire
⚠ 3	15015201	Power Transformer (XX)
⚠	15015202	Power Transformer (UL, CSA)
⚠	15015205	Power Transformer (EU, BS, AS)
⚠ 4	38005700	Power Supply Cord (XX, UL, CSA)
⚠	38004500	Power Supply Cord (EU)
⚠	38004300	Power Supply Cord (BS)
⚠	07204200	Power Supply Cord (AS)
5	47157300	AC Cord Cover
6	47174920	Right Side Panel Ass'y <Silver Model>
	47491000	Right Side Panel Ass'y <Black Model>
7	47351100	Joint Shaft
8	46370300	Eject Damper Ass'y
9	47375700	Damper Holder
10	47378200	Counter Belt
11	47174810	Left Side Panel Ass'y <Silver Model>
	47490900	Left Side Panel Ass'y < Black Model>
⚠ 12	07204700	Slide SW., Voltage Selector (EU, BS)
13	47292700	Leaf Switch, harf

8. EXPLODED VIEW OF MECHANISM ASS'Y & PARTS LIST

8-1. Front View of Mechanism Chassis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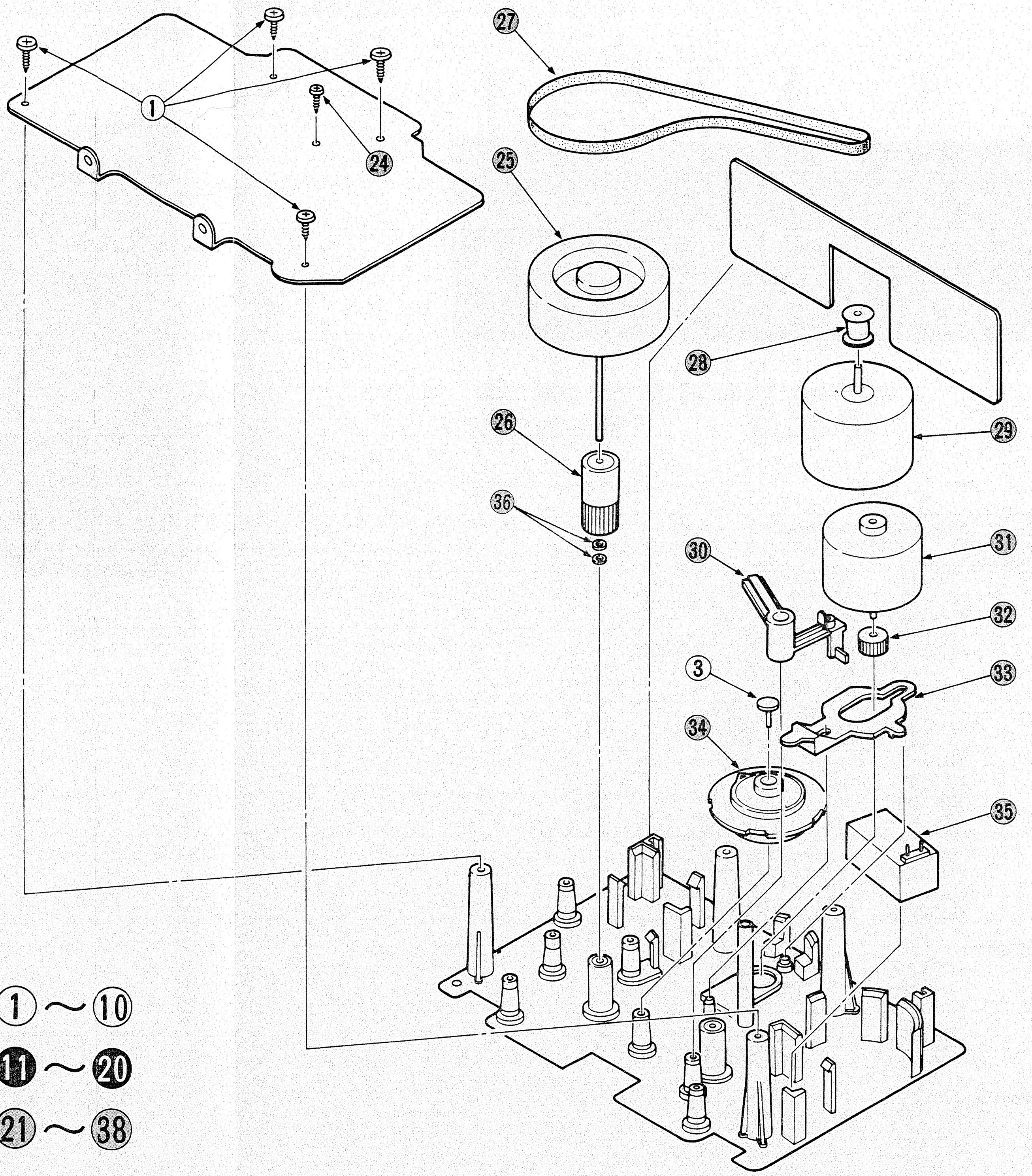
③
⑤

8-2. Rear View of Mechanism Chassis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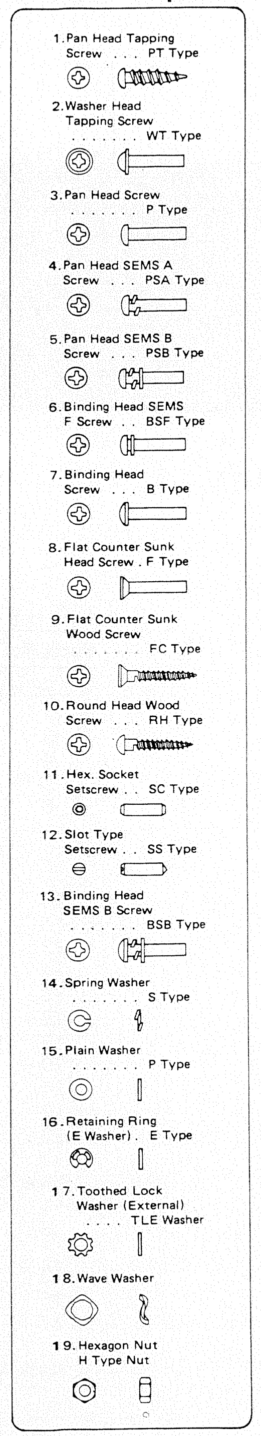
•Shapes of standard mechanical parts


1. Pan Head Tapping Screw . . . PT Type
2. Washer Head Tapping Screw . . . . WT Type
3. Pan Head Screw . . . . P Type
4. Pan Head SEMS A Screw . . . PSA Type
5. Pan Head SEMS B Screw . . . PSB Type
6. Binding Head SEMS F Screw . . BSF Type
7. Binding Head Screw . . . B Type
8. Flat Counter Sunk Head Screw . F Type
9. Flat Counter Sunk Wood Screw . . . . FC Type
10. Round Head Wood Screw . . . RH Type
11. Hex. Socket Setscrew . . SC Type
12. Slot Type Setscrew . . SS Type
13. Binding Head SEMS B Screw . . . . BSB Type
14. Spring Washer . . . . S Type
15. Plain Washer . . . . P Type
16. Retaining Ring (E Washer) . E Type
17. Toothed Lock Washer (External) . . . . TLE Washer
18. Wave Washer
19. Hexagon Nut H Type Nut

Parts List

Parts No.	Stock No.	Description
1	46731200	Tapping Screw, M2.6×8
2	47406000	Spring, eject
3	47420900	Plastic Tack
4	47281800	Pinchroller Ass'y
5	47405500	Spring, pinchroller
6	47406200	Spring, head base
7	47405600	Spring, head slider
8	47405900	Spring, plunger solenoid
9	47404700	Washer, ϕ2.5

Parts No.	Stock No.	Description
10	47293500	Spring, half
11	47405700	Spring, reel
12	00420900	Binding Head Screw, M2×12
13	47404900	Steel Ball, ϕ2
14	47405000	Arm Ass'y
15	47404800	Washer, 1.6×3.5
16	47497100	Washer, d=2.0
17	47281000	Sprocket
18	47281100	Reel Damper

Parts List

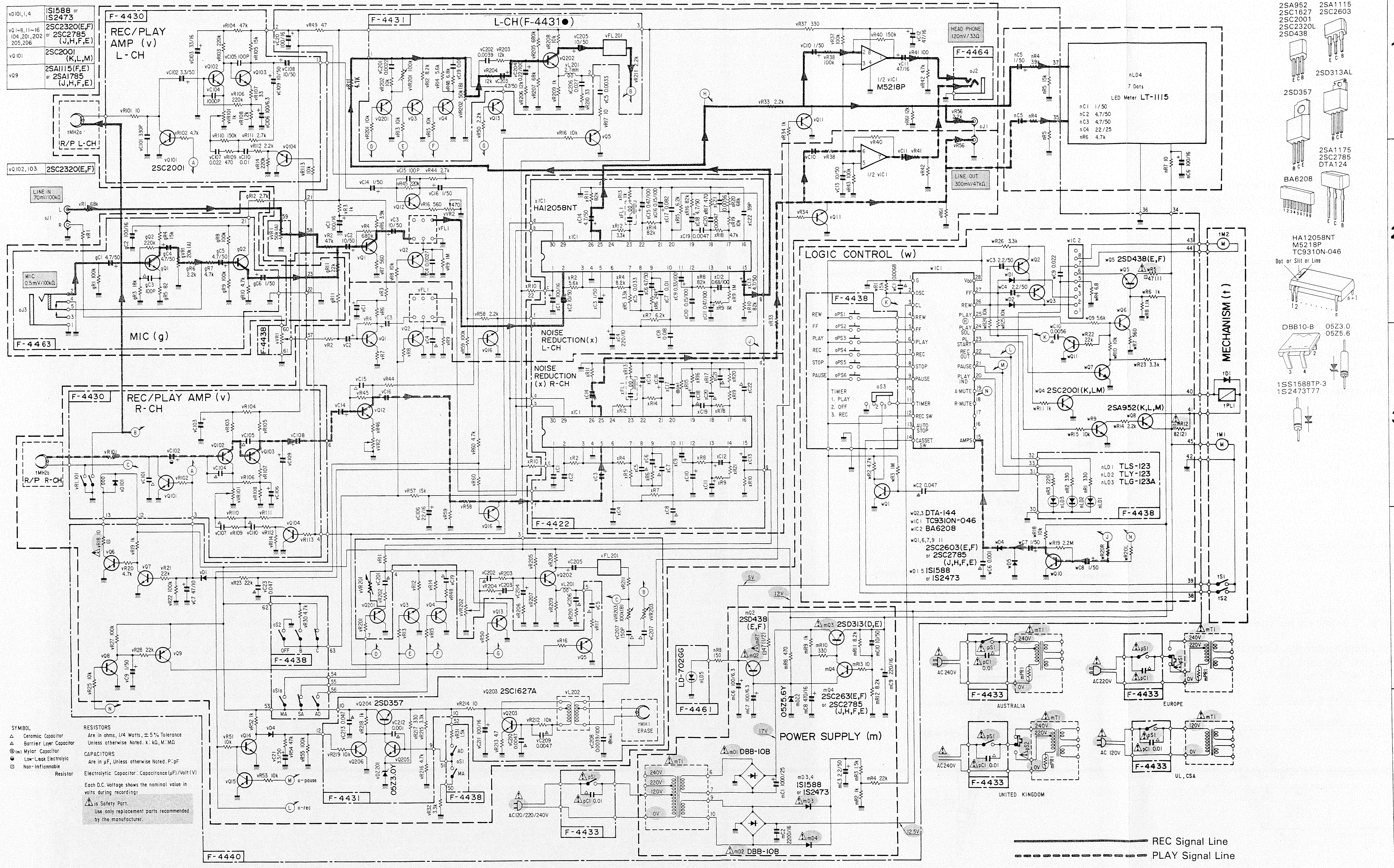
Parts No.	Stock No.	Description
19	47283300	Reel Gear
20	47283400	Reel Gear A
21	47155700	REC/PB Head
22	07997400	Erase Head
23	47406100	Spring, azimuth
24	46268900	Pan Head Deltite Screw, M2.6×6
25	47282900	Flywheel Ass'y
26	47281200	Capstan Gear
27	47405100	Belt
28	47283200	Pulley

Parts No.	Stock No.	Description
29	46737400	Capstan Motor
30	47281600	Lock Arm
31	46737500	Reel Motor
32	47293100	Gear, reel motor
33	47293800	Arm (B)
34	47283800	Assist Gear
35	47292600	Plunger Solenoid
36	47404600	Washer, 2.5×0.25
37	47284100	Head Base
38	47292400	Senser Arm (A)

A	B	C	D	E	F	G	H

9. SCHEMATIC DIAGRAM

*Design and specifications subject to change without notice for improvement.
*La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
*Anderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.



vD101, 1, 4	IS1588 or IS2473
vQ1~8, 11~16 104, 201, 202 205, 206	2SC2320(E,F) or 2SC2785 (J,H,F,E)
vQ101	2SC2001 (K,L,M)
vQ9	2SA1115(F,E) or 2SA1785 (J,H,F,E)

vQ102, 103	2SC2320(E,F)

F-4430
REC/PLAY AMP (v) L-CH
R/P L-CH
tMH2a
LINE IN 70mV/100kΩ
MIC 0.5mV/100kΩ
F-4463
MIC (g)
F-4431
L-CH(F-4431●)
NOISE REDUCTION(x) L-CH
NOISE REDUCTION (x) R-CH
HA12058NT
F-4422
F-4438
HEAD PHONE 120mV/33Ω
F-4464
M5218P
LINE OUT 300mV/47kΩ
nLD4 7 Dots LED Meter LT-1115
LOGIC CONTROL (w)
wIC1 TC9310N-046
wIC2 BA6208
wQ2,3 DTA-144
wQ1,6,7,9,11 2SC2603(E,F) or 2SC2785 (J,H,F,E)
wD1 5 IS1588 or IS2473
wQ4 2SC2001(K,LM)
wQ8 2SA952(K,L,M)
wQ5 2SD438(E,F)
nLD1 TLS-123
nLD2 TLY-123
nLD3 TLG-123A
MECHANISM (t)
tM2
tM1
tPL1
tS1
tS2
F-4430
REC/PLAY AMP (v) R-CH
tMH2b R/P R-CH
vQ203 2SC1627A
vQ204 2SD357
05Z3.0Y
tMH1 ERASE
F-4440
F-4433
AC120/220/240V
D-7026G
F-4461
POWER SUPPLY (m)
mQ2 2SD438 (E,F)
mQ3 2SD313(D,E)
mQ4 2SC2631(E,F) or 2SC2785 (J,H,F,E)
05Z5.6Y
mD1 DBB-10B
mD2 DBB-10B
mD3,4 IS1588 or IS2473
5V
12V
17V
12.5V
AC 240V
AUSTRALIA
AC220V
EUROPE
AC240V
UNITED KINGDOM
AC 120V
UL, CSA
2SA952 2SA1115
2SC1627 2SC2603
2SC2001
2SC2320L
2SD438
2SD313AL
2SD357
2SA1175
2SC2785
DTA124
BA6208
HA12058NT
M5218P
TC9310N-046
Dot or Slit or Line
DBB10-B
05Z3.0
05Z5.6
1SS1588TP-3
1S2473T77

SYMBOL
△ Ceramic Capacitor
⚠ Barrier Layer Capacitor
◎(m) Mylar Capacitor
● Low-Leak Electrolyic
⊡ Non-Inflammable Resistor

RESISTORS
Are in ohms, 1/4 Watts, ±5% Tolerance Unless otherwise Noted. k: kΩ, M: MΩ

CAPACITORS
Are in μF, Unless otherwise Noted. P: pF

Electrolytic Capacitor: Capacitance (μF)/Volt (V)

Each D.C. Voltage shows the nominal value in volts during recording.

⚠ is Safety Part.
Use only replacement parts recommended by the manufacturer.

━━━━━━ REC Signal Line
━ ━ ━ ━ PLAY Signal Line

1
2
3
4
5

10. MAIN PARTS REPLACEMENT (See Exploded View on page 13)

A. Bonnet (See Fig. 10-1)

1) Remove two screws ⓈA.
2) Push the rear side of the bonnet to remove the hooks and then remove bonnet.

B. Bottom Plate

1) Remove two screws ⓈB. (Fig. 10-1)
2) Push the rear side of the bottom plate to remove the hooks and then remove bottom plate.

* Install the bottom plate after matching eject spring with Point Ⓐ of bottom plate. (Fig. 10-4)

C. Side Panel L (R) (See Fig. 10-5)

1) Remove bonnet and bottom plate.
2) Shift the position of the side panel L (R) 1.5 cm in the arrow direction.
3) Remove the hooks ② of the side panel from front panel and then pull it to the arrow direction ③ to remove the side panel L (R).

D. F-4430 and F-4431 Circuit Board

1) Remove the bonnet and bottom plate.
2) Extract four connectors from circuit boards at mechanism ass'y.
3) Remove the protection cover on F-4430 circuit board.
4) Loosen two screws fastening F-4430 circuit board.

E. Mechanism Ass'y

1) Take off the lid ass'y.
2) Remove the bonnet and bottom plate.
3) Extract five connectors from circuit boards at mechanism ass'y.
4) Remove F-4430 and F-4431 circuit board.
5) Remove the side panel L.
6) Loosen four screws ⓈX fixing mechanism ass'y. (See Top View on page 12)
7) Loosen the screw ⓈC fixing channel to remove the mechanism ass'y. (Fig. 10-1)
8) Take off counter belt.

F. Rec/PB Head ㉑

1) Remove the mechanism ass'y from set.
2) Unsolder head read wires.
3) Loosen two screws.

G. Pinch roller Ass'y ④

1) Remove the mechanism ass'y from set.
2) Pull out the lock pin ③.
3) Take out the pinchroller ass'y.

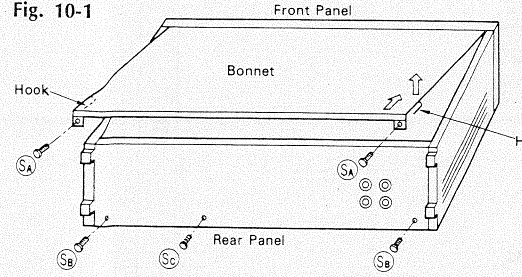
H. Reel Gear ⑲, ⑳

1) Remove the mechanism ass'y from set.
2) Take off two washer ⑮, ⑯ to pull out reel gear.

I. Capstan Motor ㉙, Reel Motor ㉛, Capstan Belt ㉗, Flywheel ㉕, Plunger Solenoid ㉟

1) Remove the F-4430 and F-4431 circuit board.
2) Remove the mechanism ass'y from set.
3) Loosen five screws ①, ㉔ fasting sub chassis ㊱.

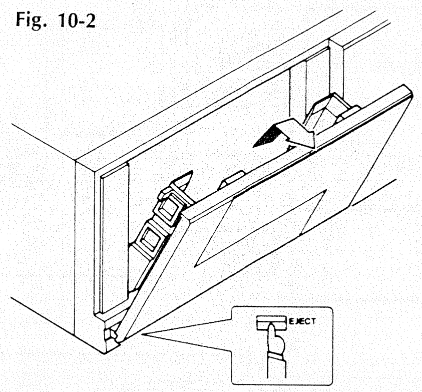
Fig. 10-1



J. Lid Ass'y

Depress the EJECT switch to open the cassette holder, and pull the cover up and then toward you to remove it as shown in hte figure.

Fig. 10-2



Re-attach the cover to the cassette holder by following the procedure for its removal in reverse.

Fig. 10-3

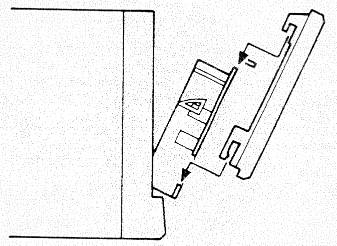


Fig. 10-4

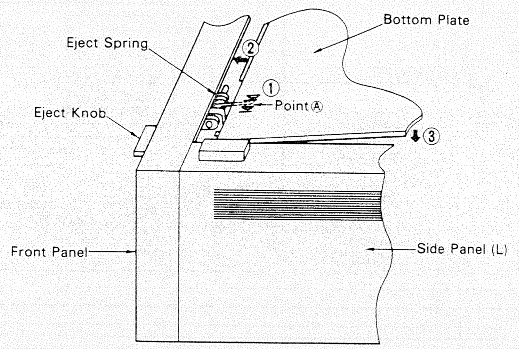
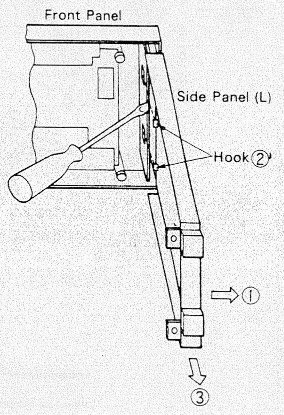
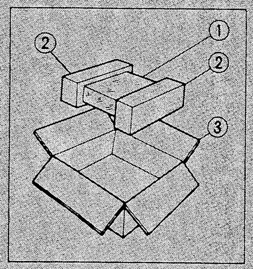


Fig. 10-5



11. PACKING LIST

Parts No.	Stock No.	Description
1	91263810	Vinyl Cover
2	47379700	Styrofoam Packing
3	47378400	Carton Case <Silver Model>
	47378500	Carton Case <Black Model>



12. ACCESSORY LIST

Stock No.	Description
07193400	PJP Cord × 2
or 38103300	PJP Cord × 2
94300500	Head Cleaner
46797900	Operating Instruction

Sansui

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(SM1-124) Printed in Japan (D30620M) <Stock No. 36488300>